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Art Unit: 2142
Examiner: Ailes
Docket No. AUS9 2001 0312 US1

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 (currently amended). A method of operating a data processing network, comprising:

performing an initial negotiation between a server of the network and a switch to which the server is connected, wherein the initial negotiation establishes an initial operating frequency of a link between the server and the switch;

determining an effective data rate of the server based on network traffic communicated over the link; and

responsive to determining that the effective data rate is different than below the capacity of a current bandwidth of the link, performing a subsequent negotiation to establish a modified operating frequency, wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency;

automatically repeating, at specified intervals during the operation of the network, the determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate.

wherein the modified operating frequency is the lowest operating frequency accommodated by the link that is sufficient to handle the effective data rate.

2-3 (canceled).

4 (original). The method of claim 1, wherein the initial and subsequent negotiation are compliant with the IEEE 802.3 standard.

5 (previously amended). The method of claim 1, wherein determining the effective data rate includes accumulating information indicative of the amount of network traffic during a specified interval and calculating an effective data rate based thereon.

6 (previously amended). The method of claim 1, further comprising, responsive to determining that the effective data rate is greater than a specified percentage of the current bandwidth, performing a subsequent negotiation to establish a modified operating frequency, wherein the modified operating frequency is higher than the current operating frequency.

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7 (currently amended). A data processing network, comprising:

a central switch;

a server device including a processor, memory, and a network interface card connecting the server device to the central switch via a link;

code means for performing an initial negotiation, wherein the initial negotiation establishes an initial operating frequency of the link;

code means for determining an effective data rate of the server based on network traffic transmitted over the link; and

code means for performing a subsequent negotiation to establish a modified operating frequency responsive to determining that the effective data rate is different than a current bandwidth of the link, wherein the modified operating frequency is the lowest operating frequency accommodated by the link that is sufficient to handle the effective data rate; and

code means for automatically repeating, at specified intervals during the operation of the network, the determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate.

8-9 (canceled).

10 (original). The network of claim 7, wherein the initial and subsequent negotiation are compliant with the IEEE 802.3 standard.

11 (previously amended). The network of claim 7, wherein the code means for determining the effective data rate includes code means for accumulating information indicative of the amount of network traffic during a specified interval and calculating an effective data rate based thereon.

12 (original). The network of claim 7, further comprising, code means for performing a subsequent negotiation to establish a modified operating frequency responsive to determining that the effective data rate is greater than a specified percentage of the current bandwidth, wherein the modified operating frequency is higher than the prior operating frequency.

13 (original). The network of claim 7, wherein the initial and subsequent negotiations are initiated by the central switch.

14 (original). The network of claim 7, wherein the initial and subsequent negotiations are initiated by the server device.

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15 (previously amended). A server device suitable for use in a server cluster, comprising:

- at least one processor;
- a system memory accessible to the processor;
- a network interface card configured to connect the server device to a central switch over a link;
- code means for performing an initial negotiation, wherein the initial negotiation establishes an initial operating frequency of the link;
- code means for determining an effective data rate of the server based on network traffic transmitted over the link; and
- code means for performing a subsequent negotiation to establish a modified operating frequency responsive to determining that the effective data rate is different than the current bandwidth of the link, wherein the modified operating frequency is the lowest operating frequency accommodated by the link that is sufficient to handle the effective data rate;

code means for automatically repeating, at specified intervals during the operation of the network, the determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate.

16-17 (canceled).

18 (previously amended). The server device of claim 15, wherein the code means for determining the effective data rate includes code means for accumulating information indicative of the amount of network traffic during a specified interval and calculating an effective data rate based thereon.

19 (original). The server device of claim 15, further comprising, code means for performing a subsequent negotiation to establish a modified operating frequency responsive to determining that the effective data rate is greater than a specified percentage of the current bandwidth, wherein the modified operating frequency is higher than the prior operating frequency.

20 (original). The server device of claim 15, wherein the network interface card includes a clock unit configured to provide a clocking signal that controls the link operating frequency, and further wherein the code means for establishing the modified operating frequency includes code means for programming a clock register that controls the frequency of the clocking signal.

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21 (currently amended). A computer program product comprising computer executable instructions, stored on a computer readable medium, for conserving energy in a data processing network having a switch, a server, and a link connecting the switch to the server, the instructions comprising:

instructions for detecting that the link is underutilized including instructions for determining that a capacity of a current bandwidth of the link is greater than an effective data rate of the link; and

instructions for responding to said detecting by reducing an operating frequency of the link; and

instructions for automatically repeating, at specified intervals, said instructions for detecting and said instruction for responding to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate.

22 (previously presented). The computer program product of claim 21, further comprising instructions for determining the effective data rate of the link, wherein the effective data is indicative of an amount of data traversing the link during a specified interval.

23 (currently amended). The computer program product of claim 22, further comprising:

instructions for detecting that the link is over-utilized include instructions for determining that a current bandwidth of the link is less than an effective data rate of the link; and

instructions for responding to said detecting that the link is over-utilized by increasing an operating frequency of the ~~link~~ link.